

Bureau of Infectious Disease and Laboratory Sciences

Hepatitis C Virus Infection

2015 Surveillance Report

Bureau of Infectious Disease and Laboratory Sciences

Massachusetts State Public Health Laboratory
305 South Street
Jamaica Plain, MA 02130

Tel: (617) 983-6550
Fax: (617) 983-6925

To speak to the on-call epidemiologist

Tel: (617) 983-6800

Requests for additional data

<http://www.mass.gov/eohhs/gov/departments/dph/programs/id/isis/surveillance-data-request.html>

Acknowledgments

This report was prepared by the following MDPH staff:

Anthony Osinski, MPH
Shauna Onofrey, MPH
Susan Soliva, MPH
Daniel Church, MPH

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**Massachusetts Department of Public Health
Bureau of Infectious Disease
Division of Epidemiology and Immunization**

**Hepatitis C Virus (HCV) Infection Data Summary
2007-2014**

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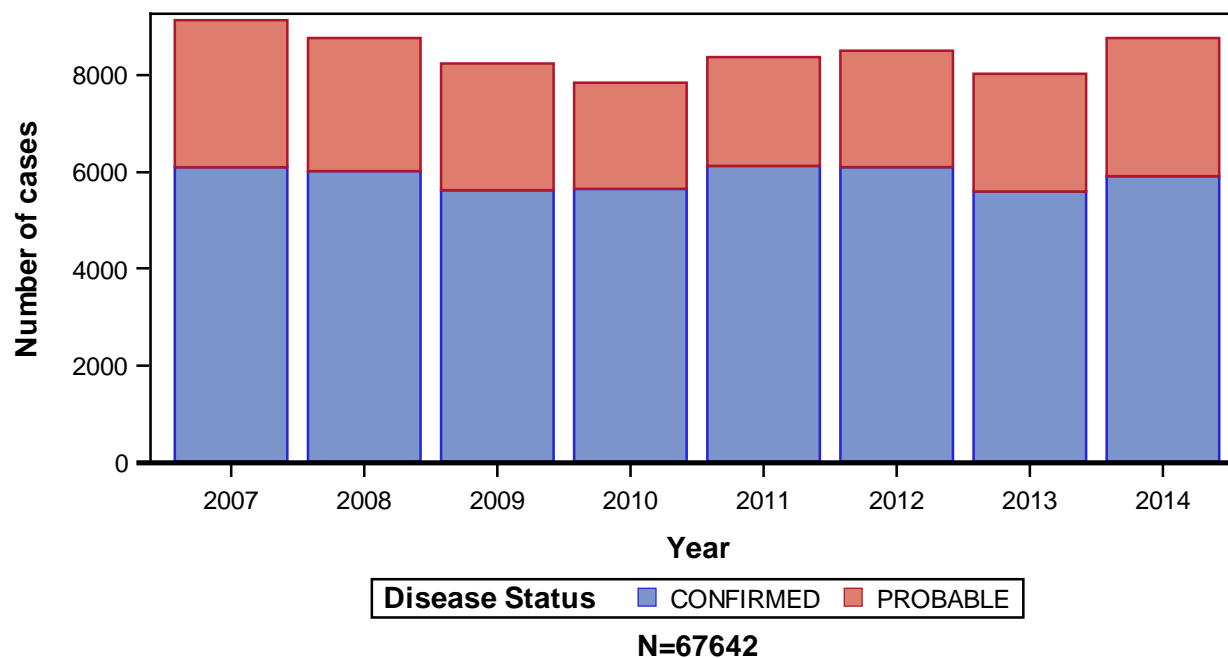
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Bureau of Infectious Disease and Laboratory Sciences
Division of Epidemiology and Immunization**

Number of Confirmed and Probable Past or Present and Acute HCV Cases Reported in MA by Year, 2007-2014

	2007	2008	2009	2010	2011	2012	2013	2014
CONFIRMED	6094	6016	5605	5636	6107	6100	5577	5903
PROBABLE	3047	2744	2633	2203	2265	2409	2446	2857
TOTAL CASES	9141	8760	8238	7839	8372	8509	8023	8760

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Number of Confirmed and Probable HCV Cases Reported in MA by Year, 2007-2014



Data are current as of Nov 17, 2015 and are subject to change

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Division of Epidemiology and Immunization

Number and Rate per 100,000 Population of Confirmed and Probable HCV Cases Reported in MA by Year and Age Group in Years, 2007-2014

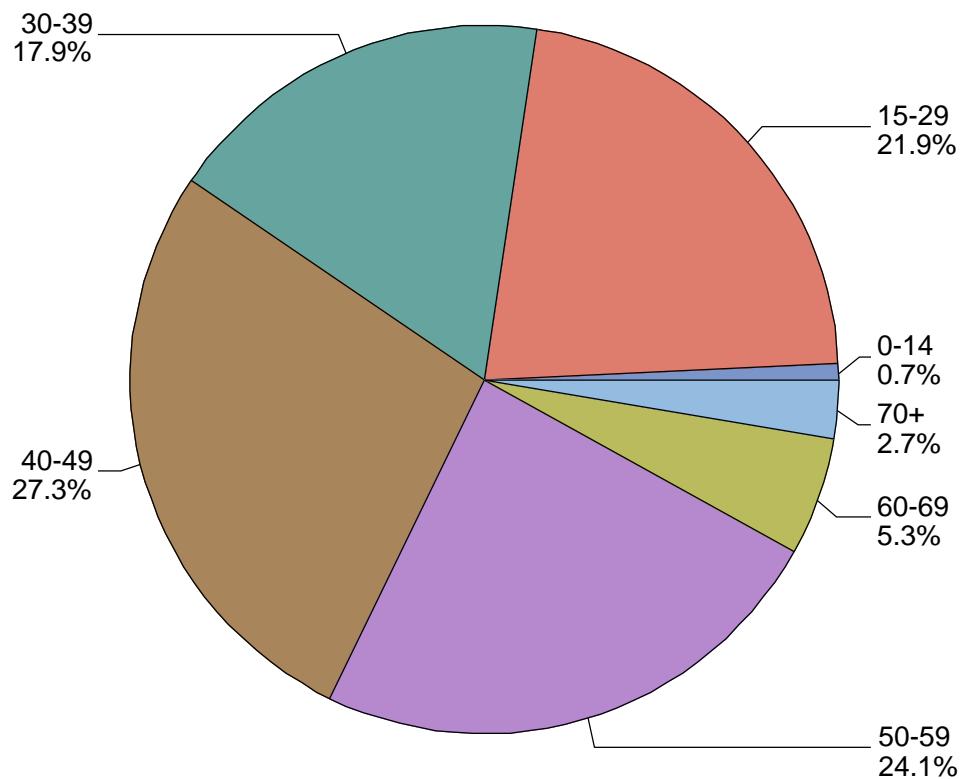
	2007		2008		2009		2010		2011		2012		2013		2014	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
A) 0-14	61	5.3	72	6.2	40	3.5	28	2.4	46	4.0	68	5.9	37	3.2	27	2.3
B) 15-29	1901	137.8	1876	135.9	1930	139.9	1942	140.7	2026	146.8	2286	165.7	2421	175.4	2606	188.8
C) 30-39	1548	188.4	1530	186.2	1487	180.9	1486	180.8	1583	192.6	1681	204.5	1656	201.5	1775	216.0
D) 40-49	2365	240.3	2223	225.8	1904	193.4	1766	179.4	1631	165.7	1531	155.5	1201	122.0	1243	126.3
E) 50-59	2091	224.9	2076	223.3	2037	219.1	1833	197.1	2055	221.0	1905	204.9	1634	175.7	1787	192.2
F) 60-69	463	72.9	451	71.0	494	77.8	543	85.5	737	116.1	766	120.6	824	129.8	1018	160.3
G) 70+	235	36.8	222	34.8	208	32.6	204	32.0	254	39.8	230	36.0	227	35.6	277	43.4

Missing values excluded.
Rate denominators are based on 2010 Census data.

Data are current as of Nov 17, 2015 and are subject to change

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**Percent of Confirmed and Probable HCV Cases Reported in MA
by Age Group in Years, 2007**

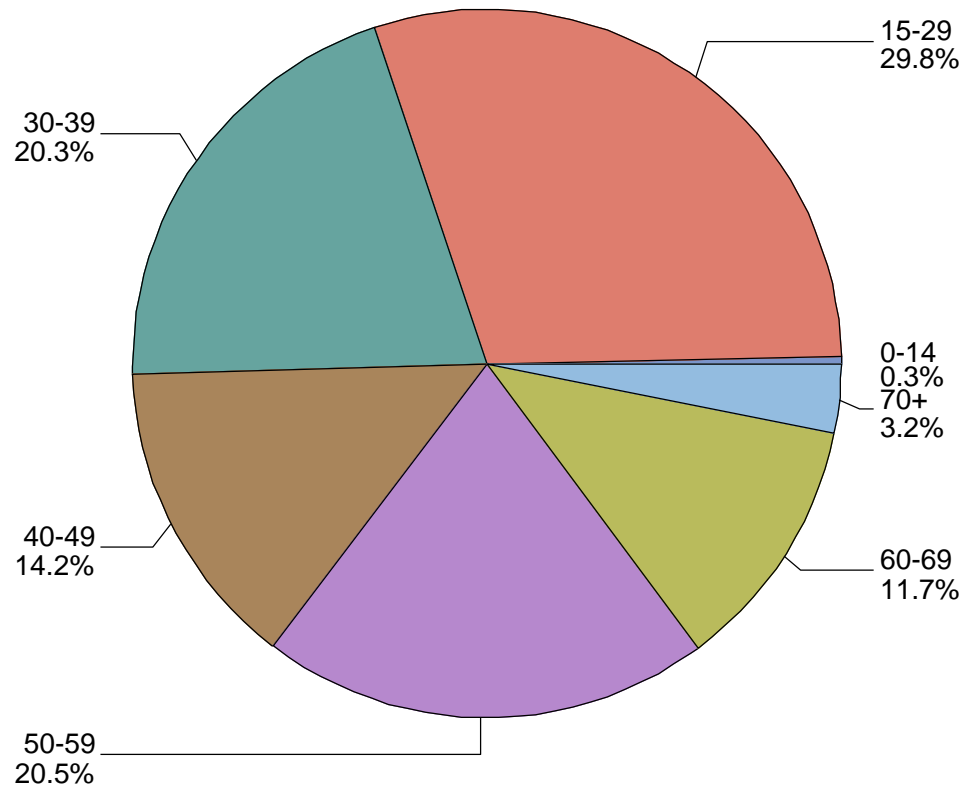


N=8664

477 cases with missing age were excluded from analysis

Data are current as of Nov 17, 2015 and are subject to change

**Percent of Confirmed and Probable HCV Cases Reported in MA
by Age Group in Years, 2014**



N=8733

27 cases with missing age were excluded from analysis

Data are current as of Nov 17, 2015 and are subject to change

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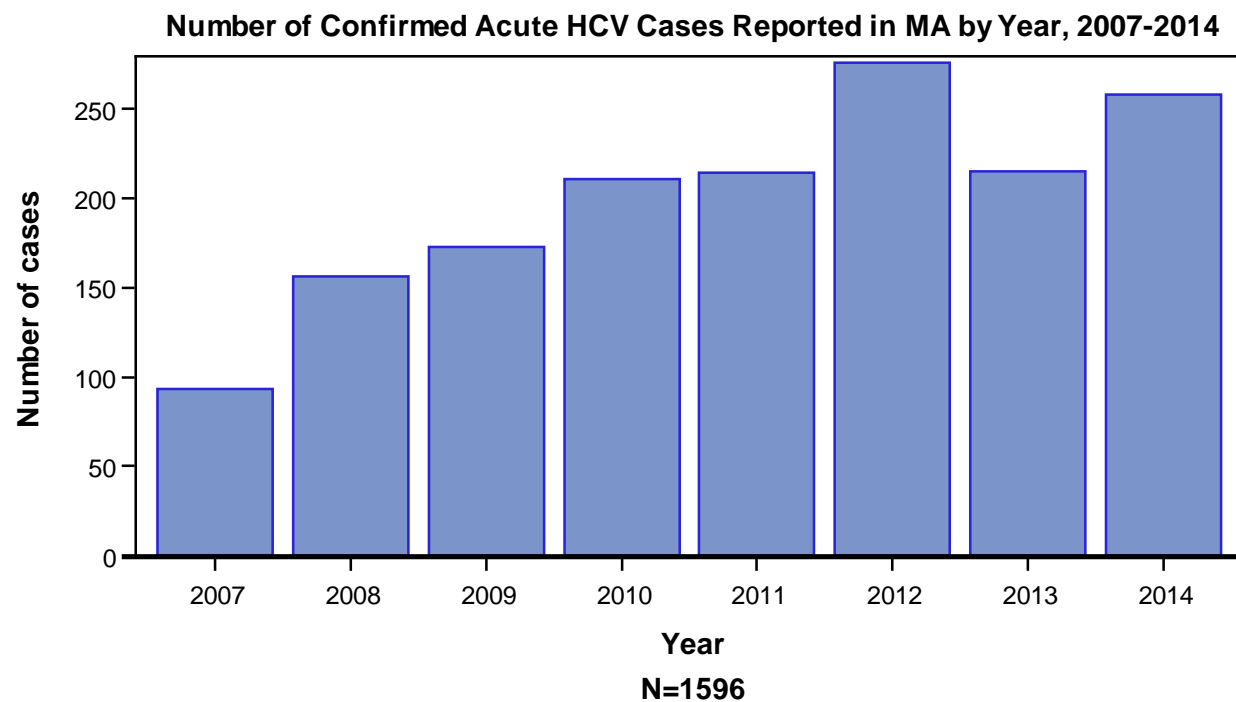
Number and Rate per 100,000 Population of Confirmed Acute HCV Cases Reported in MA by Year, 2007-2014

	2007		2008		2009		2010		2011		2012		2013		2014	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
STATEWIDE TOTAL	93	1.4	156	2.4	173	2.6	211	3.2	214	3.3	276	4.2	215	3.3	258	3.9

Rate denominators are based on 2010 Census data.

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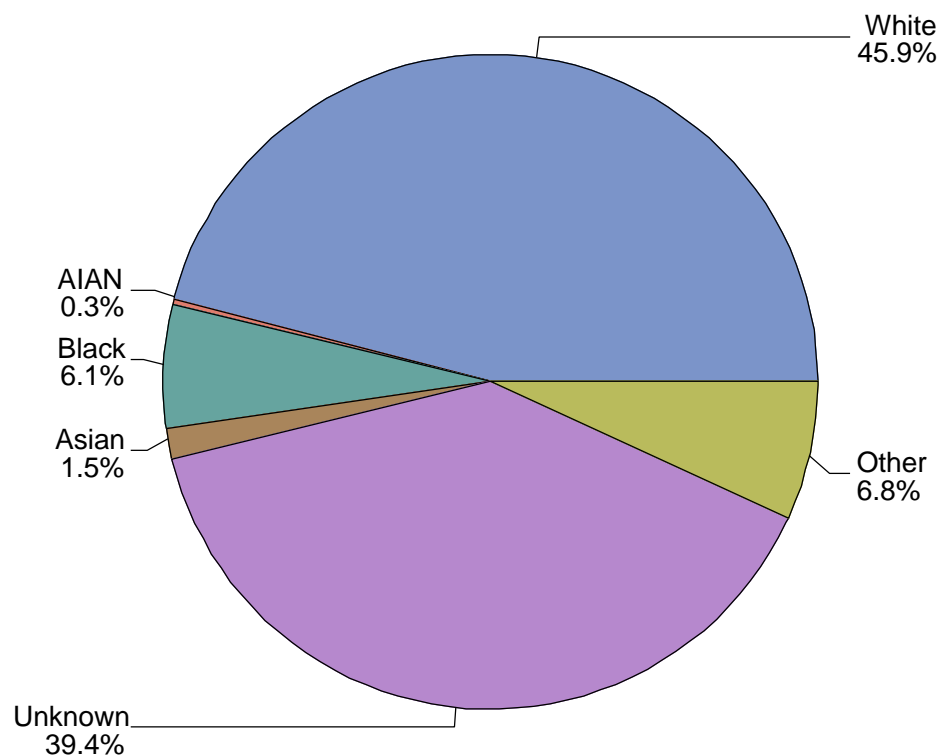
Number of Confirmed and Probable HCV Cases Reported in MA by Race and Year, 2007-2014

	2007		2008		2009		2010		2011		2012		2013		2014	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A) American Indian/Alaskan Native	25	0.3	22	0.3	21	0.3	24	0.3	21	0.3	30	0.4	26	0.3	15	0.2
B) Asian	138	1.5	157	1.8	148	1.8	142	1.8	150	1.8	169	2.0	138	1.7	159	1.8
C) Black	557	6.1	542	6.2	495	6.0	442	5.6	458	5.5	479	5.6	431	5.4	475	5.4
D) White	4197	45.9	4428	50.5	4183	50.8	4282	54.6	4564	54.5	4462	52.4	4259	53.1	4253	48.6
E) Other	622	6.8	539	6.2	423	5.1	471	6.0	464	5.5	466	5.5	408	5.1	472	5.4
F) Unknown	3602	39.4	3072	35.1	2968	36.0	2478	31.6	2715	32.4	2903	34.1	2761	34.4	3386	38.7

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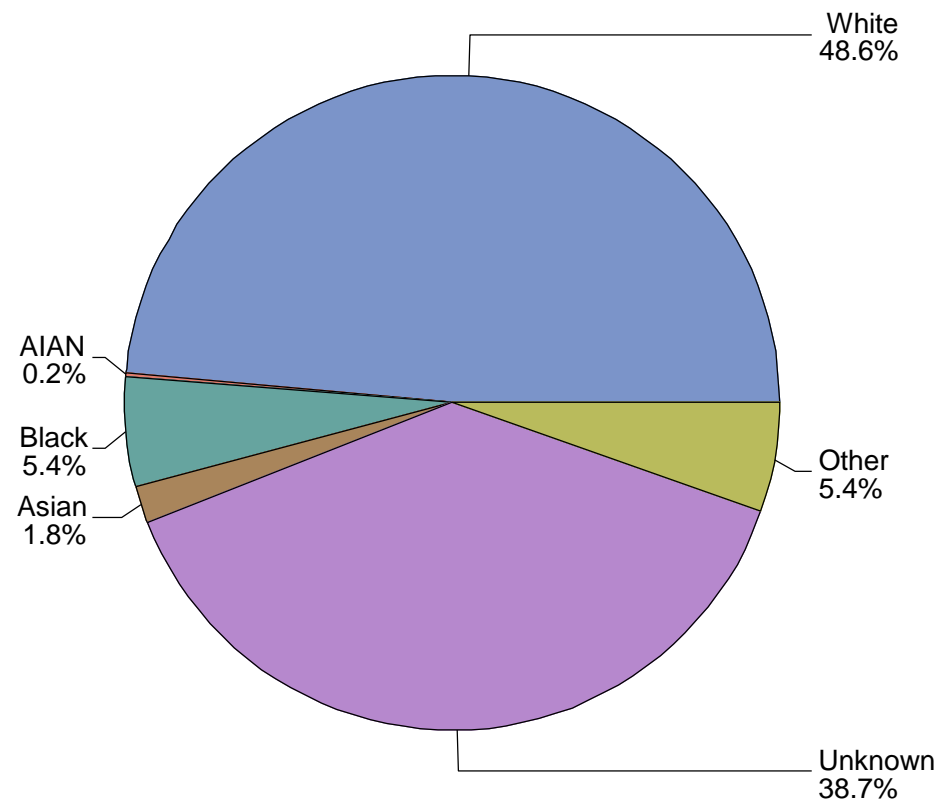
**Percent of Confirmed and Probable HCV Cases
Reported in MA by Race, 2007**



N=9141

Data are current as of Nov 17, 2015 and are subject to change

**Percent of Confirmed and Probable HCV Cases
Reported in MA by Race, 2014**



N=8760

Data are current as of Nov 17, 2015 and are subject to change

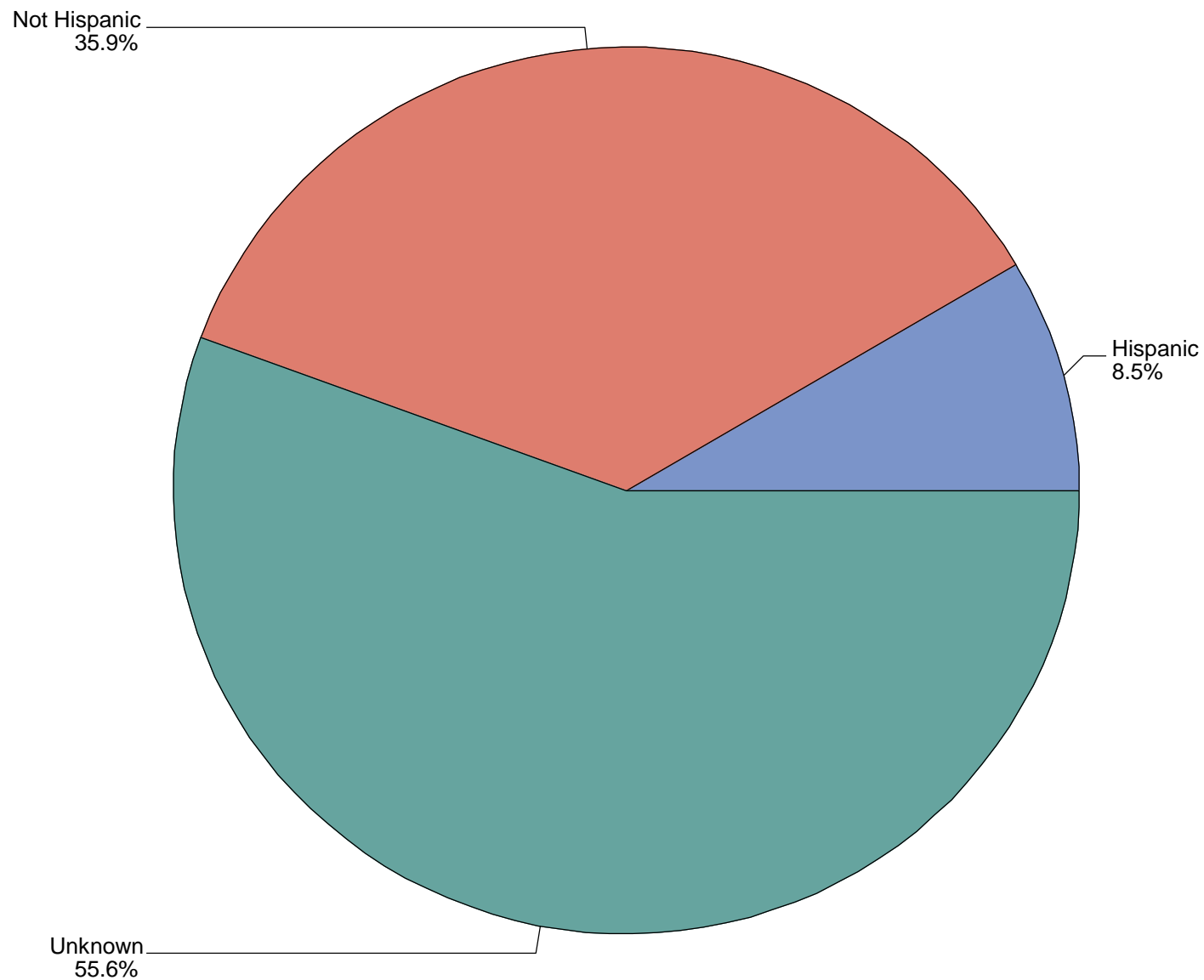
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Number of Confirmed and Probable HCV Cases Reported in MA by Hispanic Ethnicity and Year, 2007-2014

	2007		2008		2009		2010		2011		2012		2013		2014	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A) Hispanic	830	9.1	865	9.9	799	9.7	713	9.1	697	8.3	678	8.0	576	7.2	580	6.6
B) Not Hispanic	2958	32.4	2970	33.9	2932	35.6	2951	37.6	3193	38.1	3192	37.5	3071	38.3	3028	34.6
C) Unknown	5353	58.6	4925	56.2	4507	54.7	4175	53.3	4482	53.5	4639	54.5	4376	54.5	5152	58.8

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Percent of Confirmed and Probable HCV Cases Reported in MA by Hispanic Ethnicity, 2007-2014



N=67642

Data are current as of Nov 17, 2015 and are subject to change

Number of Confirmed and Probable HCV Cases Reported in MA by Risk Factor and Year, 2007-2014

	2007		2008		2009		2010		2011		2012		2013		2014	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
A) Injected Drugs Ever	2541	27.8	2669	30.5	2429	29.5	2420	30.9	2292	27.4	2261	26.6	2272	28.3	2188	25.0
B) Other risk history, excluding IDU	299	3.3	262	3.0	248	3.0	269	3.4	290	3.5	242	2.8	244	3.0	177	2.0
C) No or unknown history reported	2681	29.3	2525	28.8	2476	30.1	2391	30.5	2559	30.6	2467	29.0	2130	26.5	2049	23.4
D) No response	3620	39.6	3304	37.7	3085	37.4	2759	35.2	3231	38.6	3539	41.6	3377	42.1	4346	49.6

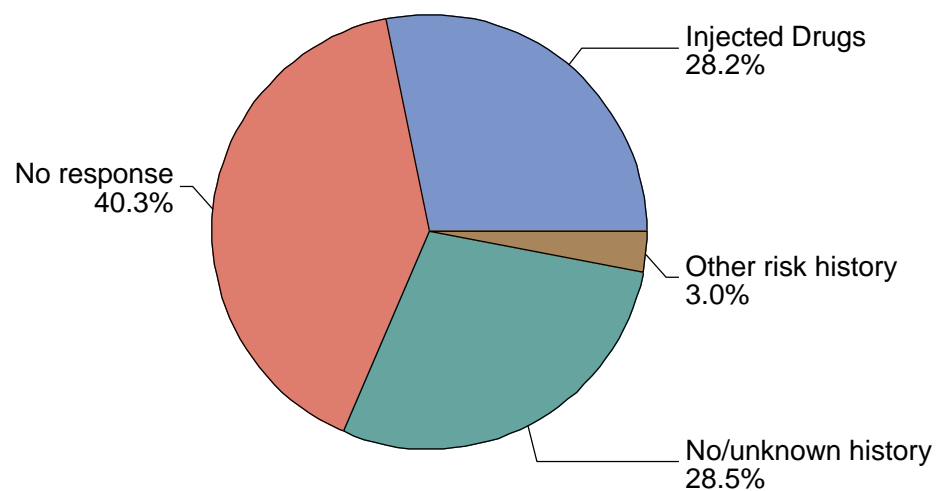
Risks included in 'Other' category include: receiving blood products prior to June 1992, receiving an organ transplant prior to 1992, receiving clotting factor concentrates produced prior to 1987, ever being on long-term hemodialysis, ever being a sexual contact of a confirmed or suspected HCV case, ever being a household contact of a confirmed or suspected HCV case, and ever being employed in a medical or dental field involving direct contact with human blood.

Note that 'C) No or unknown history reported' indicates that a case report form was received for the case, with 'No' or 'Unknown' marked for all relevant questions in the risk history. 'D) No response' indicates that no case report form was received for the case.

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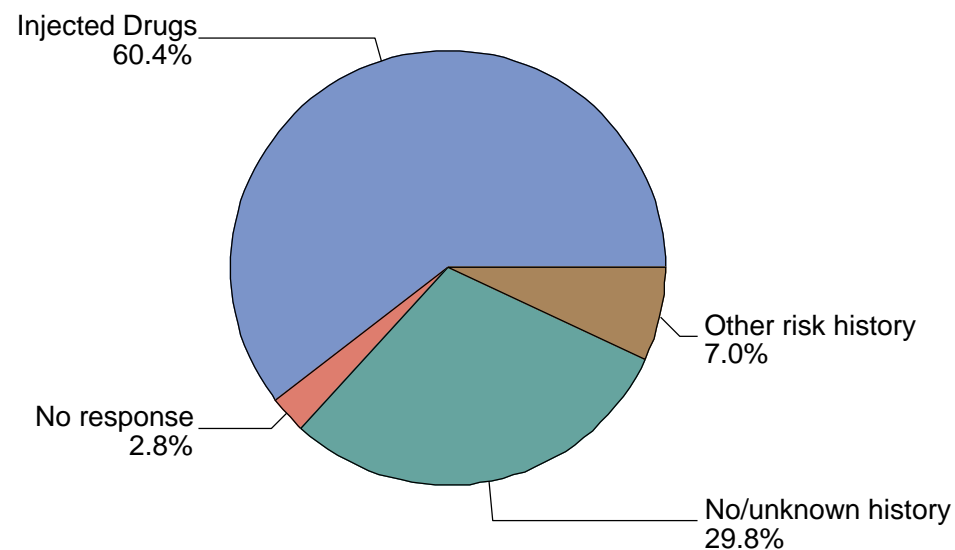
**Percent of Confirmed and Probable HCV Cases
Reported in MA by Risk Factor, 2007-2014**



N=67642

Data are current as of Nov 17, 2015 and are subject to change

**Percent of Confirmed Acute HCV Cases
Reported in MA by Risk Factor, 2007-2014**



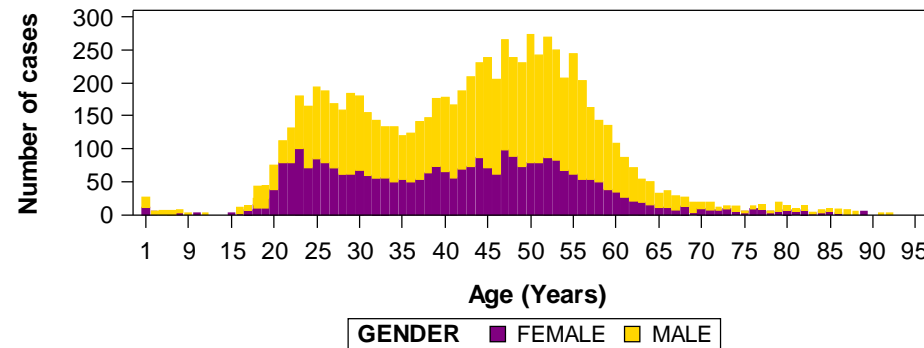
N=1596

Data are current as of Nov 17, 2015 and are subject to change

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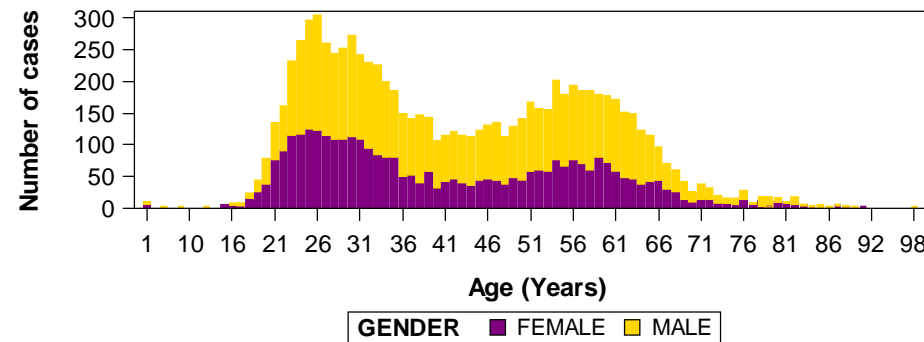
Number of Confirmed and Probable HCV Cases Reported in MA by Age and Gender - 2007



N=8199

942 cases with missing age and/or gender were excluded from analysis

Number of Confirmed and Probable HCV Cases Reported in MA by Age and Gender - 2014



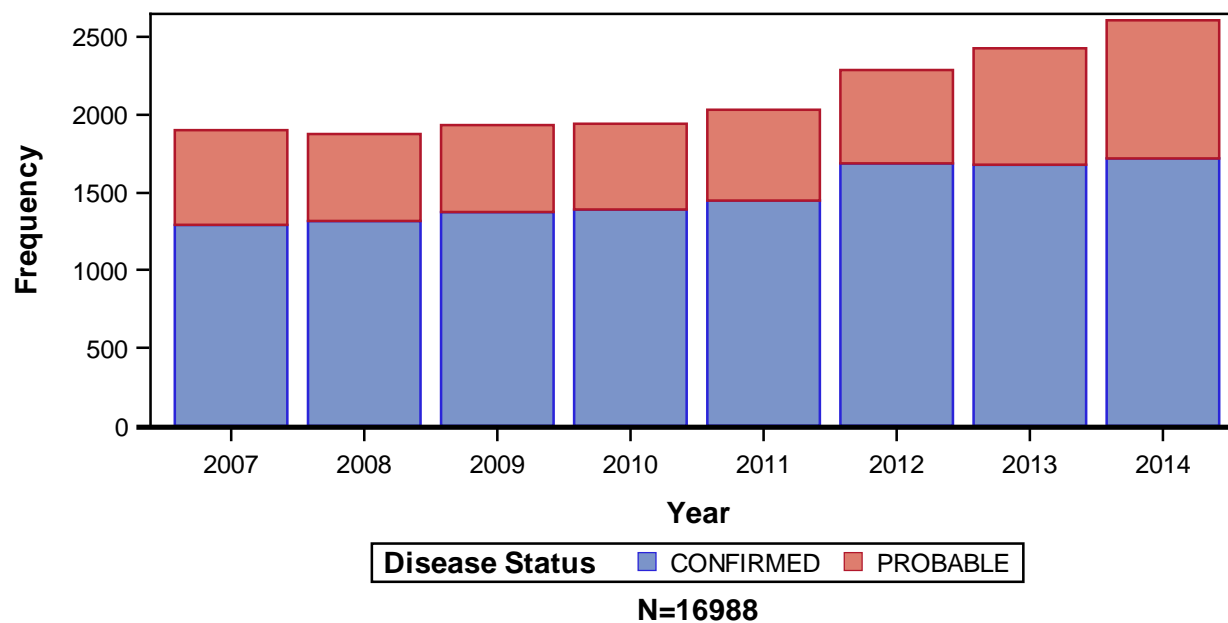
N=8688

72 cases with missing age and/or gender were excluded from analysis

Data are current as of Nov 17, 2015 and are subject to change

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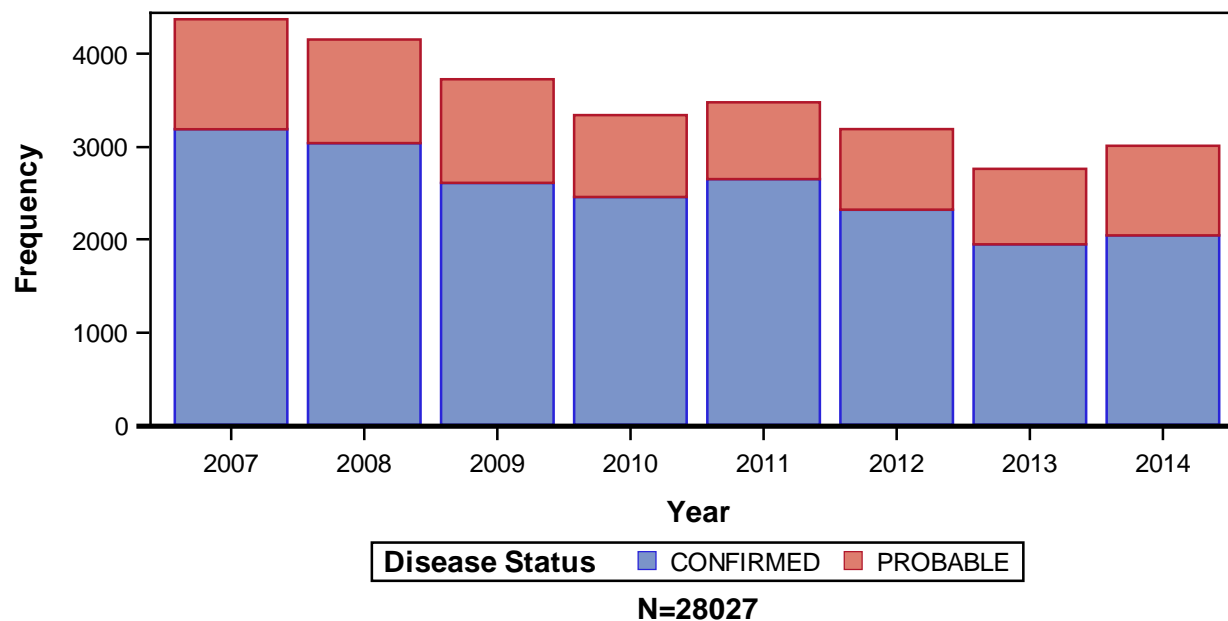
**Number of Confirmed and Probable HCV Cases Among Persons Aged 15-29 Years
Reported in MA by Year, 2007-2014**



Data are current as of Nov 17, 2015 and are subject to change

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**Number of Confirmed and Probable HCV Cases Among Persons Born
Between 1945 and 1965 Reported in MA by Year, 2007-2014**



Data are current as of Nov 17, 2015 and are subject to change

**Massachusetts Department of Public Health
Bureau of Infectious Disease and Laboratory Sciences
Division of Epidemiology and Immunization**

**Number and Rate per 100,000 Population of Confirmed and Probable HCV Cases Reported in MA by Year and Age Group,
2007-2014**

	2007		2008		2009		2010		2011		2012		2013		2014	
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
A) 15-29 Years	1901	137.8	1876	135.9	1930	139.9	1942	140.7	2026	146.8	2286	165.7	2421	175.4	2606	188.8
B) All other age groups	6763	130.9	6574	127.2	6170	119.4	5860	113.4	6306	122.0	6181	119.6	5579	108.0	6127	118.6

Missing values excluded.
Rate denominators are based on 2010 Census data.

Data are current as of Nov 17, 2015 and are subject to change

Number of Confirmed and Probable HCV Cases Aged 15-29 Years Reported in MA by Gender and Year, 2007-2014

	2007				2008				2009				2010			
	FEMALE		MALE		FEMALE		MALE		FEMALE		MALE		FEMALE		MALE	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
MA	796	47%	891	53%	782	47%	869	53%	776	47%	862	53%	844	50%	841	50%

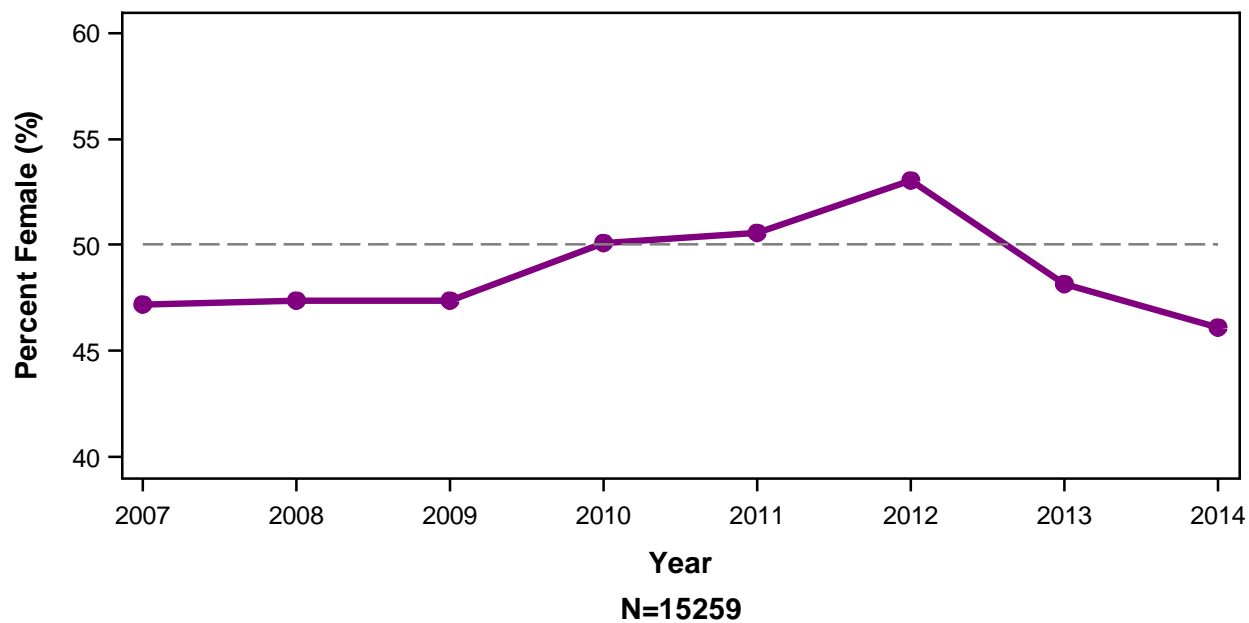
	2011				2012				2013				2014			
	FEMALE		MALE		FEMALE		MALE		FEMALE		MALE		FEMALE		MALE	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
MA	906	51%	886	49%	1108	53%	981	47%	1085	48%	1169	52%	1136	46%	1327	54%

Missing values excluded.

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**Massachusetts Department of Public Health
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**Percent of Confirmed and Probable HCV Cases Aged 15-29 Years
Reported in MA by Gender and Year, 2007-2014**



Data are current as of Nov 17, 2015 and are subject to change

Massachusetts Department of Public Health
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Number of Confirmed and Probable HCV Cases Reported in MA by County and Year, 2007-2014

	2007	2008	2009	2010	2011	2012	2013	2014
BERKSHIRE COUNTY	168	159	161	168	121	150	121	156
BRISTOL COUNTY	764	781	728	689	795	822	779	877
CAPE AND ISLANDS	307	339	304	281	366	356	356	389
ESSEX COUNTY	864	805	743	722	839	829	763	948
FRANKLIN COUNTY	84	78	68	61	58	70	92	93
HAMPDEN COUNTY	850	813	780	675	694	739	747	653
HAMPSHIRE COUNTY	117	86	95	97	99	111	115	118
MIDDLESEX COUNTY	1331	1337	1163	1076	1323	1422	1368	1435
NORFOLK COUNTY	534	532	471	509	586	596	581	706
PLYMOUTH COUNTY	382	467	441	522	578	589	611	636
SUFFOLK COUNTY	1243	1160	1026	1084	1072	1157	1093	1332
WORCESTER COUNTY	1070	878	862	745	771	787	784	883
UNKNOWN COUNTY	1427	1325	1396	1210	1070	881	613	534

The Cape and Islands is comprised of Barnstable, Dukes, and Nantucket Counties.

Data are current as of Nov 17, 2015 and are subject to change

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Rate per 100,000 Population of Confirmed and Probable HCV Cases Reported in MA by County and Year, 2007-2014

	2007	2008	2009	2010	2011	2012	2013	2014
ALL MASSACHUSETTS	119.1	113.8	104.6	101.3	111.6	116.5	114.0	127.2
BERKSHIRE COUNTY	128.0	121.2	122.7	128.0	92.2	114.3	92.2	118.9
BRISTOL COUNTY	139.3	142.4	132.8	125.7	145.0	149.9	142.1	160.0
CAPE AND ISLANDS	126.5	139.7	125.3	115.8	150.9	146.7	146.7	160.3
ESSEX COUNTY	116.3	108.3	100.0	97.2	112.9	111.6	102.7	127.6
FRANKLIN COUNTY	117.7	109.3	95.3	85.5	81.3	98.1	128.9	130.3
HAMPDEN COUNTY	183.4	175.4	168.3	145.6	149.7	159.4	161.2	140.9
HAMPSHIRE COUNTY	74.0	54.4	60.1	61.4	62.6	70.2	72.7	74.6
MIDDLESEX COUNTY	88.6	89.0	77.4	71.6	88.0	94.6	91.0	95.5
NORFOLK COUNTY	79.6	79.3	70.2	75.9	87.4	88.8	86.6	105.2
PLYMOUTH COUNTY	77.2	94.4	89.1	105.5	116.8	119.0	123.5	128.5
SUFFOLK COUNTY	172.2	160.7	142.1	150.1	148.5	160.2	151.4	184.5
WORCESTER COUNTY	134.0	109.9	107.9	93.3	96.5	98.6	98.2	110.6

Rate denominators are based on 2010 Census data.
The Cape and Islands is comprised of Barnstable, Dukes, and Nantucket Counties.

Data are current as of Nov 17, 2015 and are subject to change

Number of Confirmed and Probable HCV Cases Reported in MA by County, Gender, and Year, 2007-2014

	2007				2008				2009				2010			
	FEMALE		MALE		FEMALE		MALE		FEMALE		MALE		FEMALE		MALE	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ALL MASSACHUSETTS	2872	39%	4578	61%	2719	38%	4455	62%	2499	38%	4087	62%	2581	39%	4019	61%
BERKSHIRE COUNTY	48	33%	97	67%	47	34%	90	66%	49	36%	89	64%	67	41%	96	59%
BRISTOL COUNTY	304	42%	425	58%	300	39%	463	61%	297	42%	416	58%	281	41%	408	59%
CAPE AND ISLANDS	124	44%	157	56%	139	43%	188	57%	128	43%	171	57%	120	43%	160	57%
ESSEX COUNTY	350	43%	468	57%	313	41%	456	59%	278	40%	422	60%	296	42%	416	58%
FRANKLIN COUNTY	28	35%	53	65%	21	28%	53	72%	24	39%	38	61%	25	41%	36	59%
HAMPDEN COUNTY	241	31%	549	69%	273	35%	499	65%	249	34%	479	66%	241	36%	427	64%
HAMPSHIRE COUNTY	44	40%	67	60%	25	29%	61	71%	36	40%	55	60%	40	42%	56	58%
MIDDLESEX COUNTY	523	41%	750	59%	517	40%	770	60%	416	37%	702	63%	431	40%	641	60%
NORFOLK COUNTY	221	42%	302	58%	202	39%	315	61%	189	41%	270	59%	217	43%	289	57%
PLYMOUTH COUNTY	143	39%	228	61%	165	36%	289	64%	174	41%	254	59%	196	38%	324	62%
SUFFOLK COUNTY	457	38%	754	62%	395	35%	727	65%	329	33%	672	67%	386	36%	698	64%
WORCESTER COUNTY	372	36%	661	64%	313	37%	539	63%	327	39%	515	61%	281	38%	463	62%

Missing values excluded.
The Cape and Islands is comprised of Barnstable, Dukes, and Nantucket Counties.

Data are current as of Nov 17, 2015 and are subject to change

Number of Confirmed and Probable HCV Cases Reported in MA by County, Gender, and Year, 2007-2014

	2011				2012				2013				2014			
	FEMALE		MALE		FEMALE		MALE		FEMALE		MALE		FEMALE		MALE	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ALL MASSACHUSETTS	2815	39%	4466	61%	3075	40%	4537	60%	3059	41%	4381	59%	3328	40%	4972	60%
BERKSHIRE COUNTY	58	48%	63	52%	65	43%	85	57%	53	44%	68	56%	65	42%	89	58%
BRISTOL COUNTY	347	44%	446	56%	374	46%	444	54%	354	46%	424	54%	379	43%	498	57%
CAPE AND ISLANDS	160	44%	205	56%	165	46%	191	54%	163	46%	190	54%	160	41%	229	59%
ESSEX COUNTY	349	42%	488	58%	347	42%	480	58%	325	43%	438	57%	386	41%	561	59%
FRANKLIN COUNTY	20	34%	38	66%	32	46%	38	54%	34	37%	58	63%	42	45%	51	55%
HAMPDEN COUNTY	236	34%	456	66%	295	40%	441	60%	292	39%	452	61%	225	35%	427	65%
HAMPSHIRE COUNTY	32	33%	65	67%	37	34%	73	66%	46	40%	68	60%	43	37%	73	63%
MIDDLESEX COUNTY	530	40%	791	60%	565	40%	855	60%	550	40%	817	60%	629	44%	806	56%
NORFOLK COUNTY	208	36%	374	64%	234	39%	361	61%	225	39%	354	61%	260	37%	443	63%
PLYMOUTH COUNTY	229	40%	347	60%	242	41%	343	59%	258	42%	353	58%	279	44%	356	56%
SUFFOLK COUNTY	365	34%	702	66%	408	35%	749	65%	420	39%	670	61%	480	36%	850	64%
WORCESTER COUNTY	281	37%	488	63%	310	39%	475	61%	324	41%	459	59%	351	40%	530	60%

Missing values excluded.

The Cape and Islands is comprised of Barnstable, Dukes, and Nantucket Counties.

Data are current as of Nov 17, 2015 and are subject to change

Number of Confirmed and Probable HCV Cases Aged 15-29 Years Reported in MA by County and Year, 2007-2014

	2007	2008	2009	2010	2011	2012	2013	2014
ALL MASSACHUSETTS	1901	1876	1930	1942	2026	2286	2421	2606
BERKSHIRE COUNTY	34	37	43	57	38	50	48	47
BRISTOL COUNTY	169	160	189	188	250	256	266	301
CAPE AND ISLANDS	39	60	56	85	115	124	155	156
ESSEX COUNTY	227	183	178	181	194	212	211	271
FRANKLIN COUNTY	17	18	17	13	13	14	28	31
HAMPDEN COUNTY	183	167	153	141	136	162	183	144
HAMPSHIRE COUNTY	19	19	18	17	17	27	27	34
MIDDLESEX COUNTY	344	354	317	283	330	402	430	424
NORFOLK COUNTY	140	136	132	149	163	177	188	221
PLYMOUTH COUNTY	95	121	139	155	170	225	229	217
SUFFOLK COUNTY	231	244	236	247	200	248	246	284
WORCESTER COUNTY	217	171	179	170	171	195	221	274

The Cape and Islands is comprised of Barnstable, Dukes, and Nantucket Counties.

Data are current as of Nov 17, 2015 and are subject to change

Rate per 100,000 Population of Confirmed and Probable HCV Cases Aged 15-29 Years Reported in MA by County and Year, 2007-2014

	2007	2008	2009	2010	2011	2012	2013	2014
ALL MASSACHUSETTS	137.8	135.9	139.9	140.7	146.8	165.7	175.4	188.8
BERKSHIRE COUNTY	139.2	151.5	176.0	233.3	155.6	204.7	196.5	192.4
BRISTOL COUNTY	157.5	149.1	176.1	175.2	232.9	238.5	247.8	280.4
CAPE AND ISLANDS	111.8	171.9	160.5	243.6	329.5	355.3	444.1	447.0
ESSEX COUNTY	162.5	131.0	127.4	129.5	138.8	151.7	151.0	193.9
FRANKLIN COUNTY	135.3	143.2	135.3	103.4	103.4	111.4	222.8	246.6
HAMPDEN COUNTY	186.2	170.0	155.7	143.5	138.4	164.9	186.2	146.5
HAMPSHIRE COUNTY	39.9	39.9	37.8	35.7	35.7	56.7	56.7	71.4
MIDDLESEX COUNTY	109.6	112.8	101.0	90.2	105.1	128.1	137.0	135.1
NORFOLK COUNTY	114.7	111.4	108.1	122.1	133.5	145.0	154.0	181.1
PLYMOUTH COUNTY	110.8	141.1	162.1	180.7	198.2	262.3	267.0	253.0
SUFFOLK COUNTY	98.2	103.7	100.3	105.0	85.0	105.4	104.5	120.7
WORCESTER COUNTY	137.3	108.2	113.2	107.5	108.2	123.4	139.8	173.3

Rate denominators are based on 2010 Census data.
The Cape and Islands is comprised of Barnstable, Dukes, and Nantucket Counties.

Data are current as of Nov 17, 2015 and are subject to change

**Massachusetts Department of Public Health
Bureau of Infectious Disease
Division of Epidemiology and Immunization**

**Hepatitis C Virus Infection Data Summary
2007-2014**

Case classification: Past or Present HCV Infection Newly Reported to MDPH

Confirmed:

- One or more of the following criteria (except in persons less than 18 months of age, for whom only criteria 3 would meet the case classification criteria):
 1. Antibodies to hepatitis C virus (anti-HCV) screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay as defined by CDC, OR
 2. Hepatitis C Virus Recombinant Immunoblot Assay (HCV RIBA) positive, OR
 3. Nucleic Acid Test (NAT) for HCV RNA positive (including qualitative, quantitative, or genotype)

Probable:

1. Rapid HCV antibody positive test, OR
2. Anti-HCV screening-test-positive that has not been verified by a more specific assay or has unknown signal to cut-off ratio (regardless of ALT results and acute hepatitis C status)

Case classification: Acute HCV Infection

Confirmed:

- Clinically compatible presentation* not known to have chronic HCV with 1 or more of the following:
 - a. Anti-HCV screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay as defined by CDC, OR
 - b. HCV RIBA positive, OR
 - c. NAT for HCV RNA positive (including qualitative, quantitative, or genotype)

AND, if done meets the following two criteria[†]:

1. IgM anti-HAV negative AND
2. IgM anti-HBV negative

* - A documented negative HCV antibody laboratory result followed within 6 months by a positive test result (as described above) does NOT require an acute clinical presentation to meet the confirmed case definition

† - From 2007-2013, cases meeting the acute case definition but missing a negative HAV & HBV result were classified as *Suspect*. The case definition change in 2013 eliminated this requirement.

Suspect:

1. A documented negative HCV antibody laboratory test result followed within 6-12 months by a positive test result (as described above) does NOT require an acute clinical presentation to meet the suspect case definition.
2. Low level viremia (<100,000 IU/mL) not known to have chronic HCV

Note that the year into which a case is categorized is based upon the case's "Event Date", which can be calculated from the following case characteristics, in decreasing order of specificity, dependent on availability of information: symptom onset date, specimen collection date, diagnosis date, or case creation date.

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**Hepatitis C Virus Infection Data Summary
2007-2014**

References:

1. "Hepatitis C, past or Present & Hepatitis C, acute - 2012 Case Definitions." National Notifiable Diseases Surveillance System (NNDSS). Centers for Disease Control and Prevention, 6 May 2015.
2. Massachusetts Virtual Epidemiologic Network (MAVEN), Bureau of Infectious Disease, Massachusetts Department of Public Health, 305 South Street, Jamaica Plain, MA 02130